Notebook, N-90-01-04.3

This notebook covers the period January-December 1890. All entries are by Edison. At the beginning of the book is a list of iron mines in New York, New Jersey, and Pennsylvania. The book also contains drawings of the phonograph and the electric railway; notes regarding the technical and commercial development of the electric light, including notes on the contractual arrangement between the laboratory and the manufacturing company (possibly the Edison General Electric Co.); lists and drawings for an ore milling operation; and an enumeration of salaries and other operating expenses at the West Orange laboratory. There are also hypotheses on conductivity and resistance and notes on filament experiments. The front cover is labeled "#581." The inside front cover is inscribed "#581 T A Edison Jan 4. 90." The pages are unnumbered, and the book has been used in both directions. Several pages have been removed from the middle of the book. Approximately 125 pages have been used.

#581

XE-172

N-90-01-04.3

Ia Edison
Jan 4-90

Iron Mines etc

Potter Mine 4 3/5 miles N 40° W from Fort Ann near Lake George Washington Co NY
Operated John T Harris 1880 who raised 12 172 tons sent to Camden 8 miles at Fort Ann & thence to Pa
from description in Vol 15th US Census Rept
on mining p 105 immense body lean ore on side walls
Mt Hope Mine 1/2 mile NW of Potter
Wkd 1881 by W P Ostrander & Co

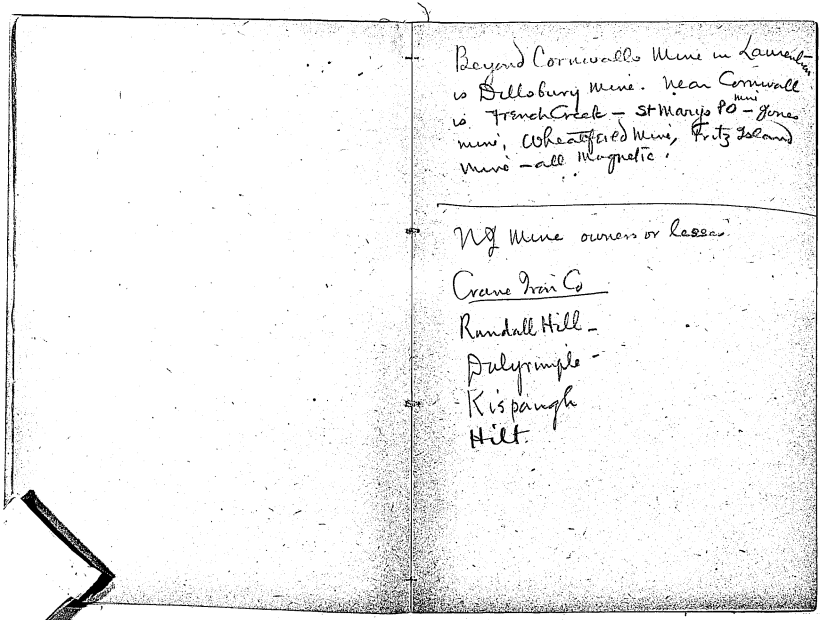
p 108 says Immense masses titaniferous near old Village of Adirondack and also near the lake at in Westport Township + elsewhere - See Emmons in Geology 2nd District p 244

O.U.

also paper ~~by~~ Reprinted from 32nd annual Rep State Museum Natural History Albany March 1880 by Chas E Hall. describes these deposits. He says Titaniferous ores belong to upper Laurentian (Laboradite) series while Magnetite ores belong to lower Laurentian.

News Dep Mine Malen Island -
Serpentine = Limonite, Canada.
39 pct Fe - 1.91 sesqui Chromium
0.55 - Nickel Sulphide 0.17 Cobalt Sulphide

Northampton Mine Pa - (Limonite)
has 0.14 Sesqui Cobalt
Most all mines run from 0.1 to 0.5



Beyond Cornwalls Mine in Launceston is Dilloburn Mine. Near Cornwall Mine is French Creek – St Marys PO – Jones Mine, Wheatsheaf Mine, Fritz Island Mine – all Magnetic.

NZ Mine owners or lessees

Crane Iron Co

Randall Hill –

Dalrymple –

Kispaugh

Hilt

Glendon Iron Co

Hibernia

Teabo

Cooper, Hewitt & Co.

Union church

Samson

Charlotte Vaughn

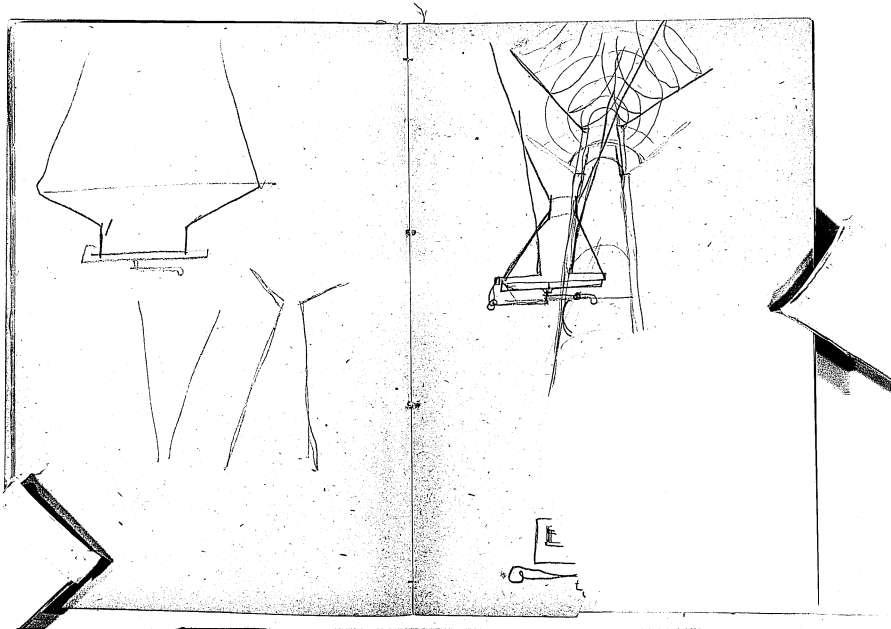
Dairen Post

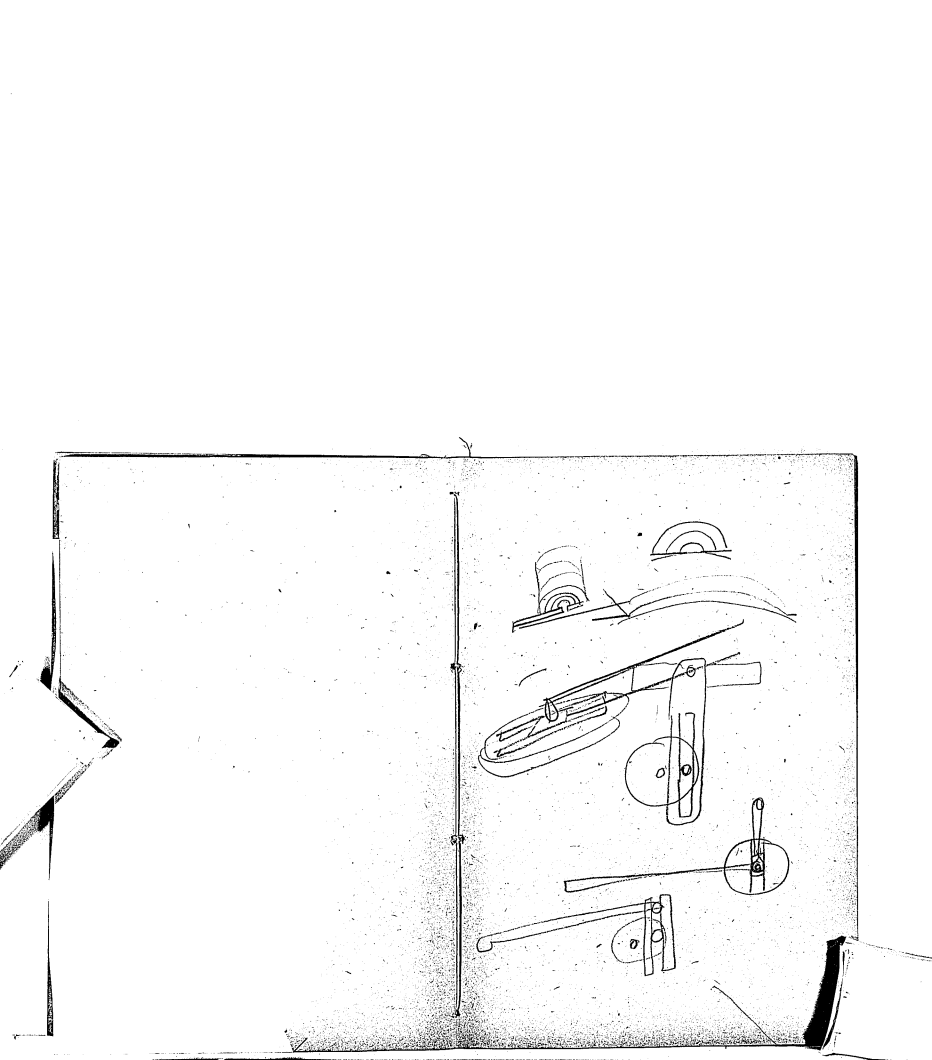
Pitney

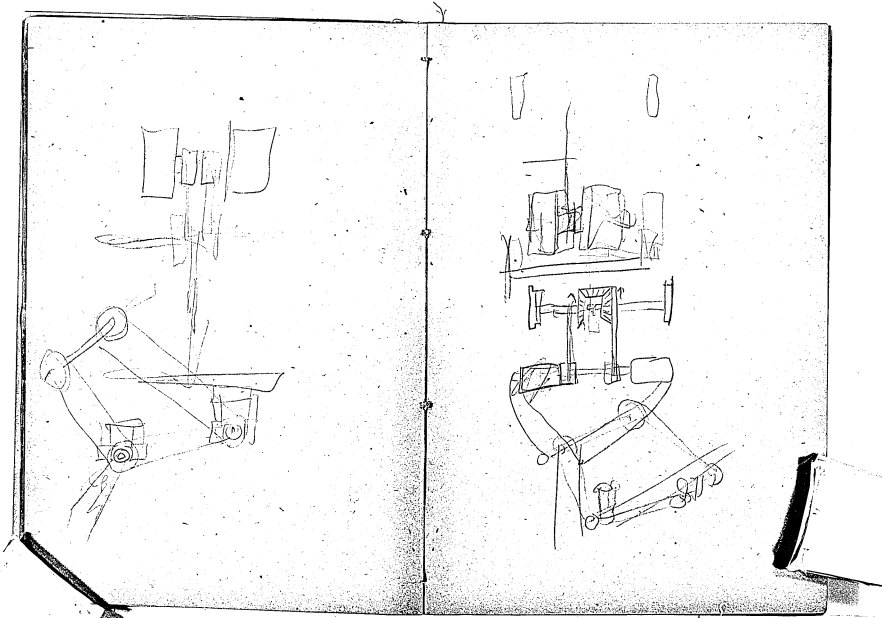
Ringwood

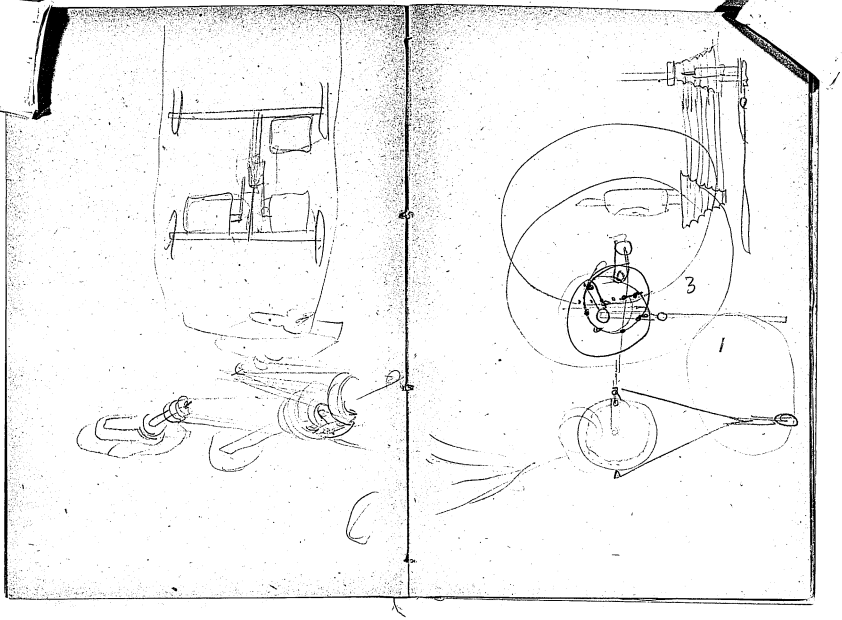
William Carpenter Mine

Pequest





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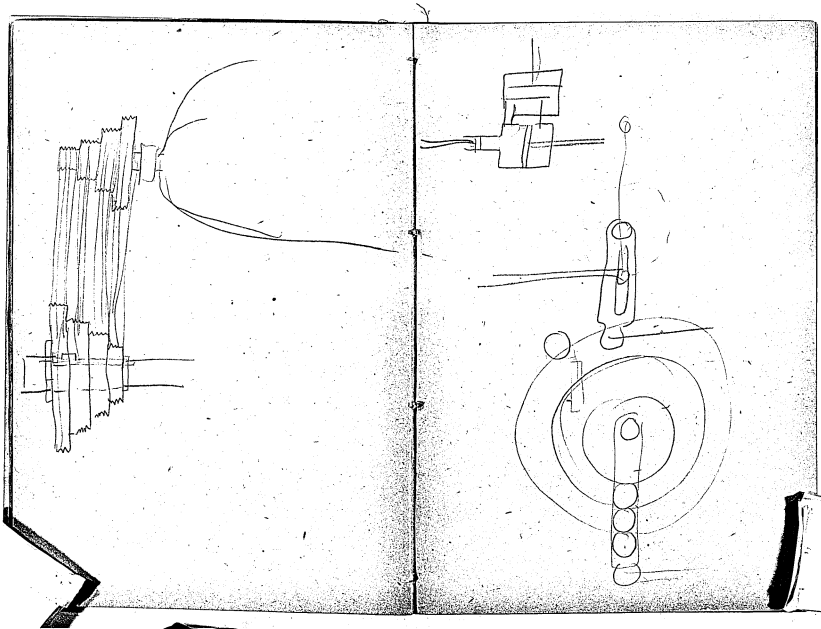

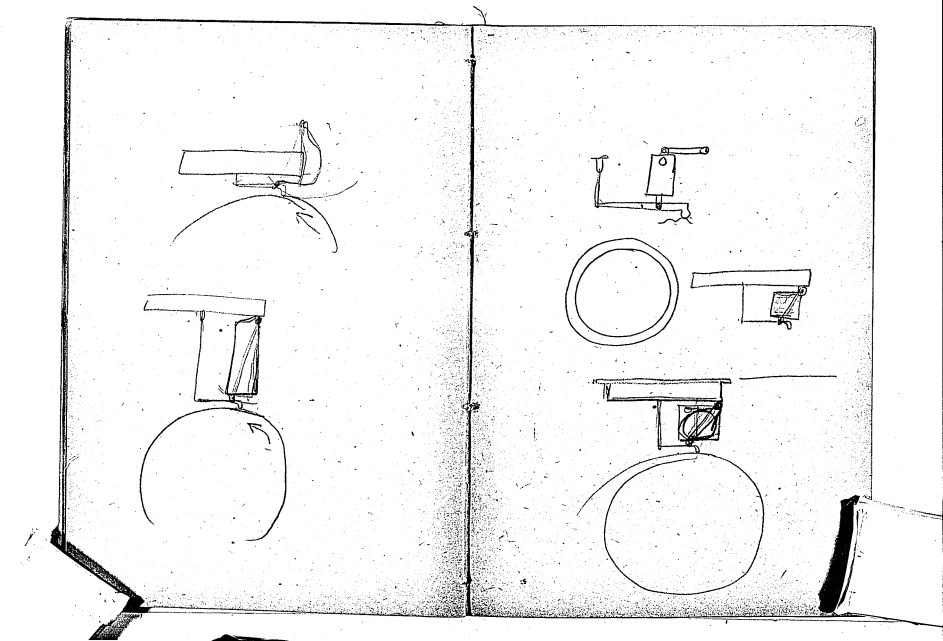

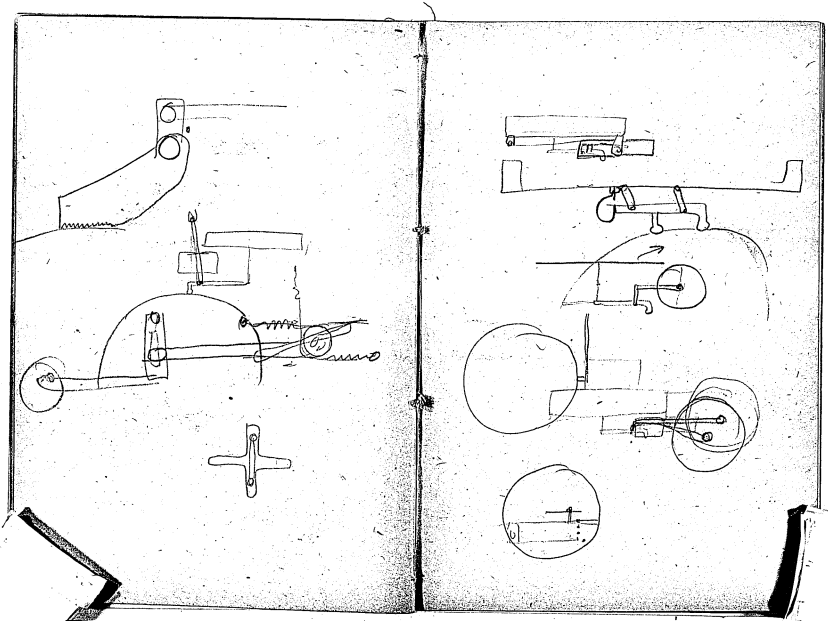

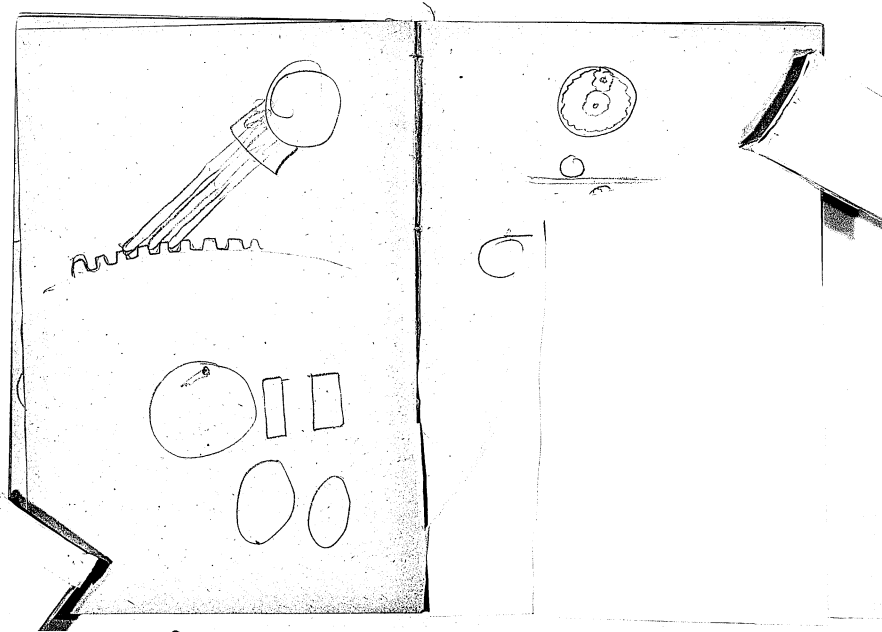

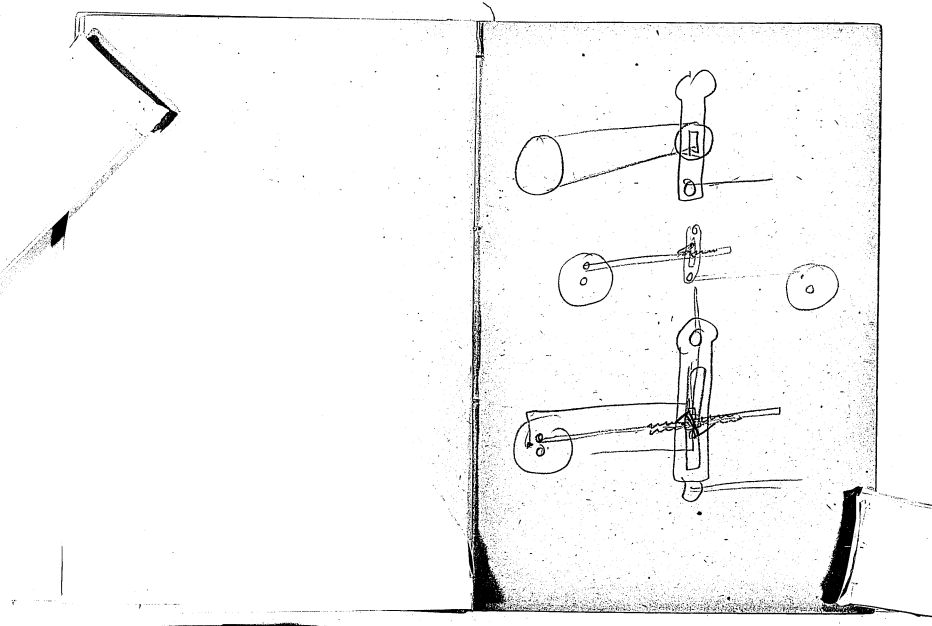

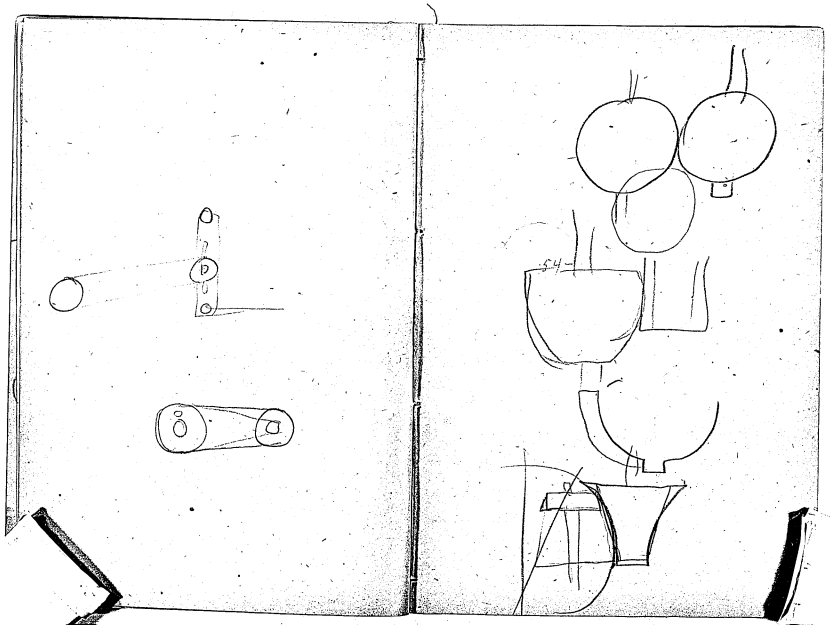
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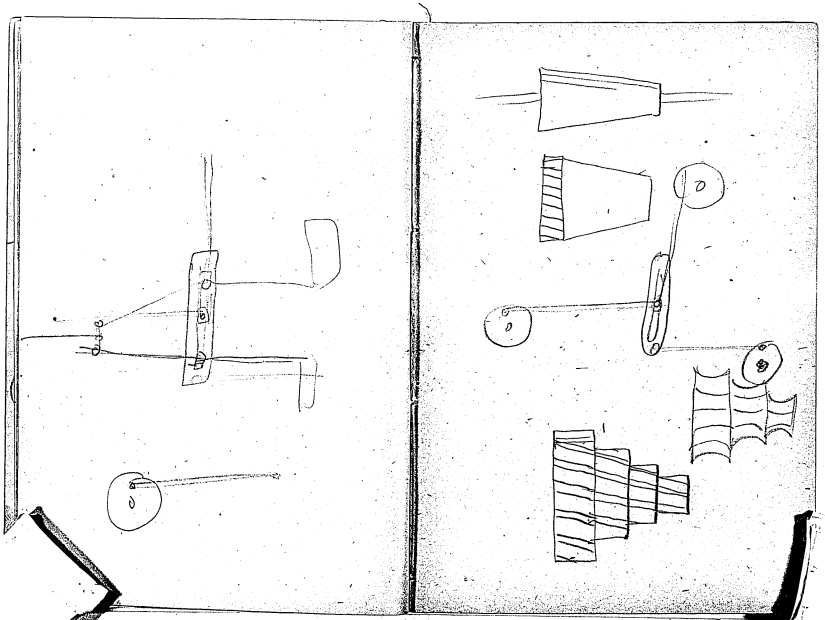

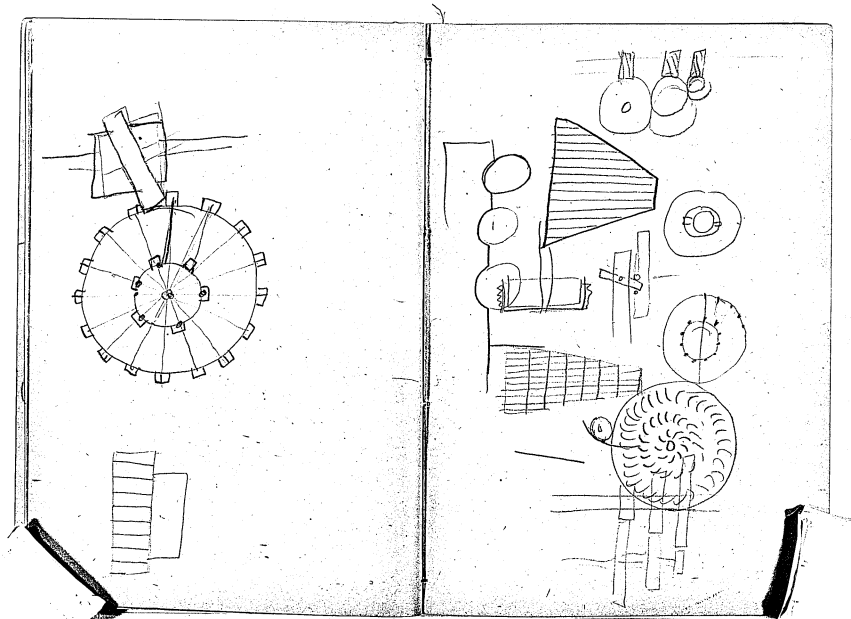

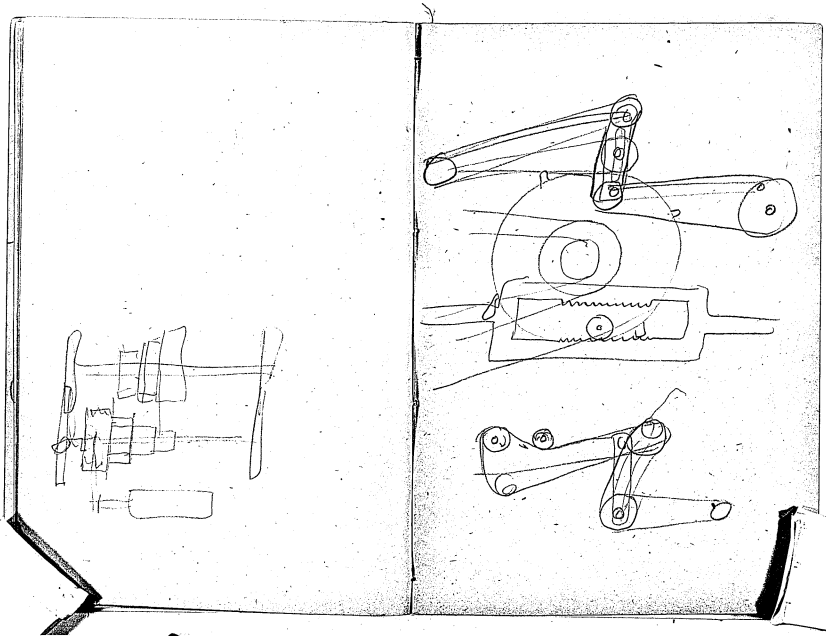

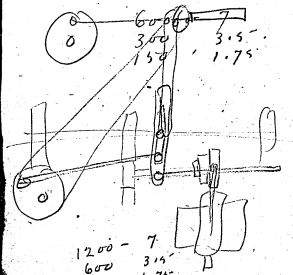

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600 3.5
3 1.75
150 - .185

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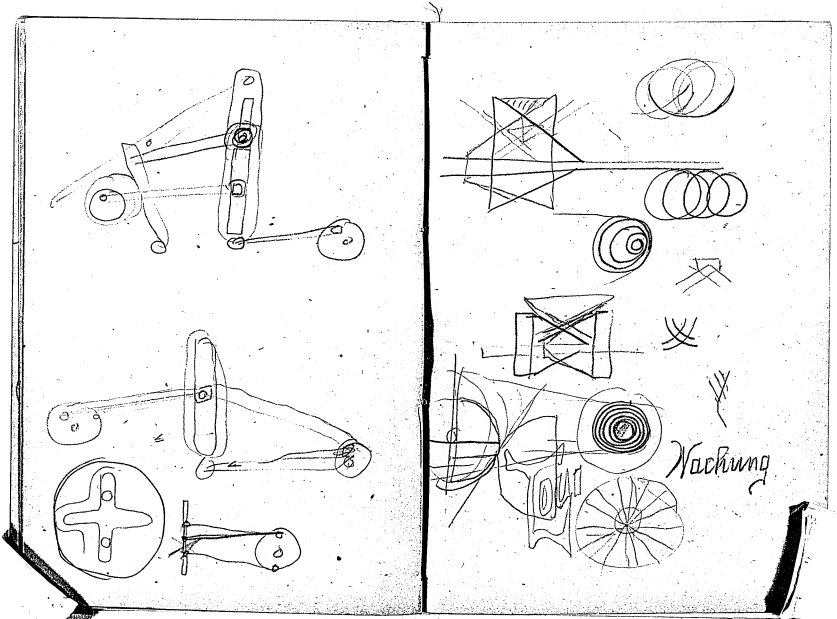
12 | 3600 | 300 | 3
3600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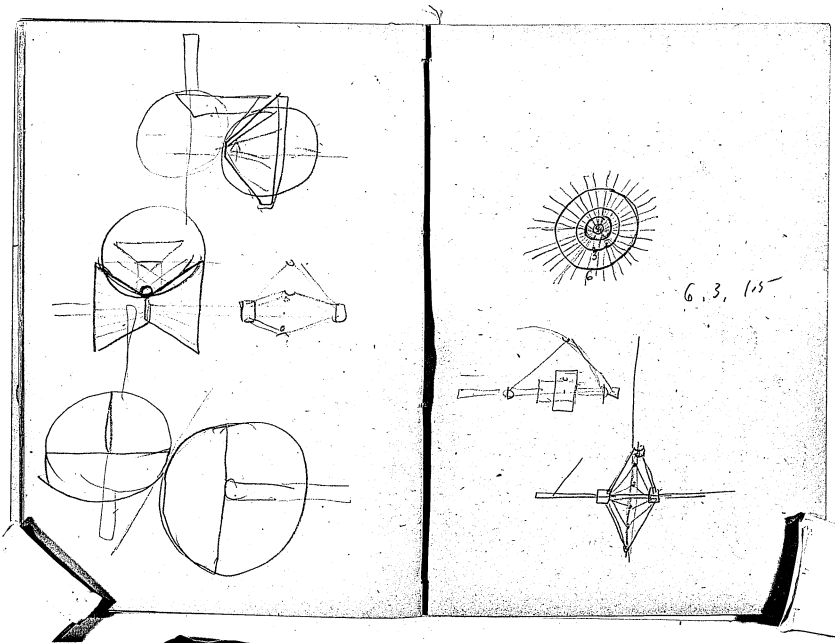
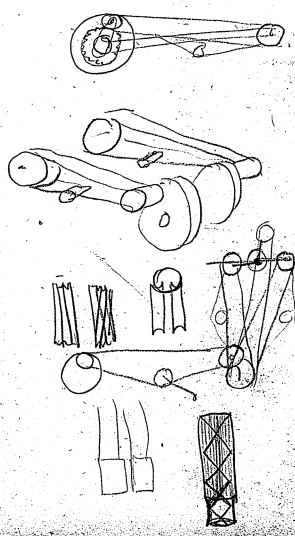
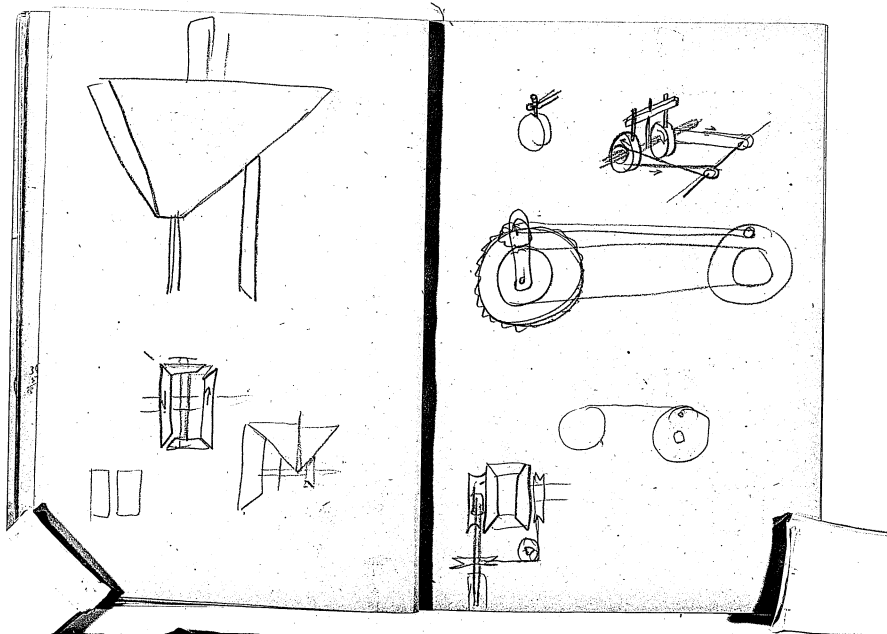
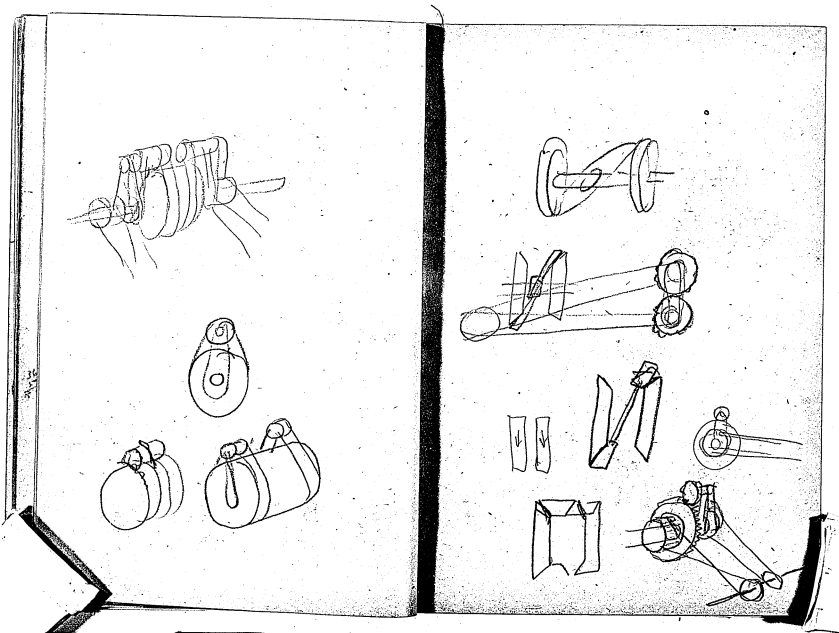

6, 3, 15

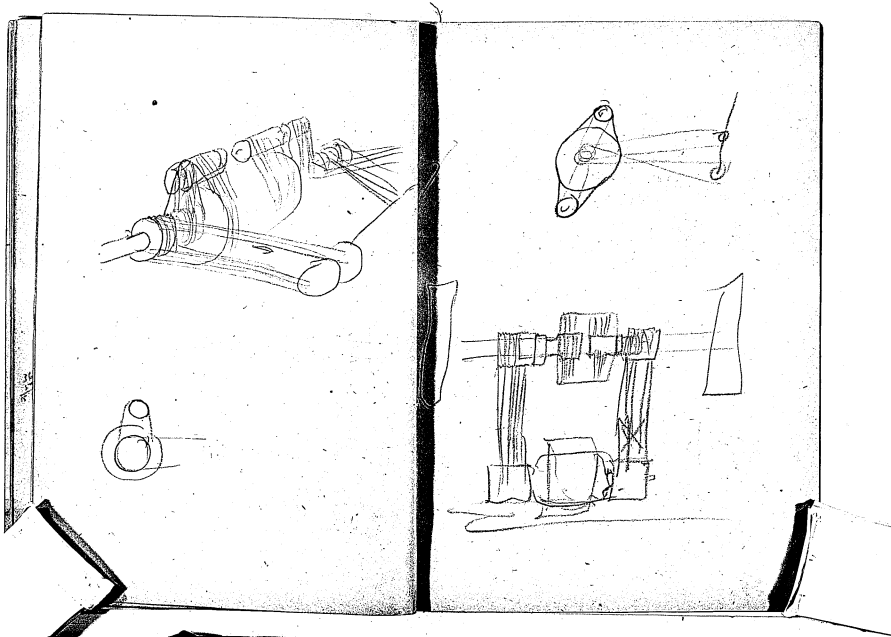
16

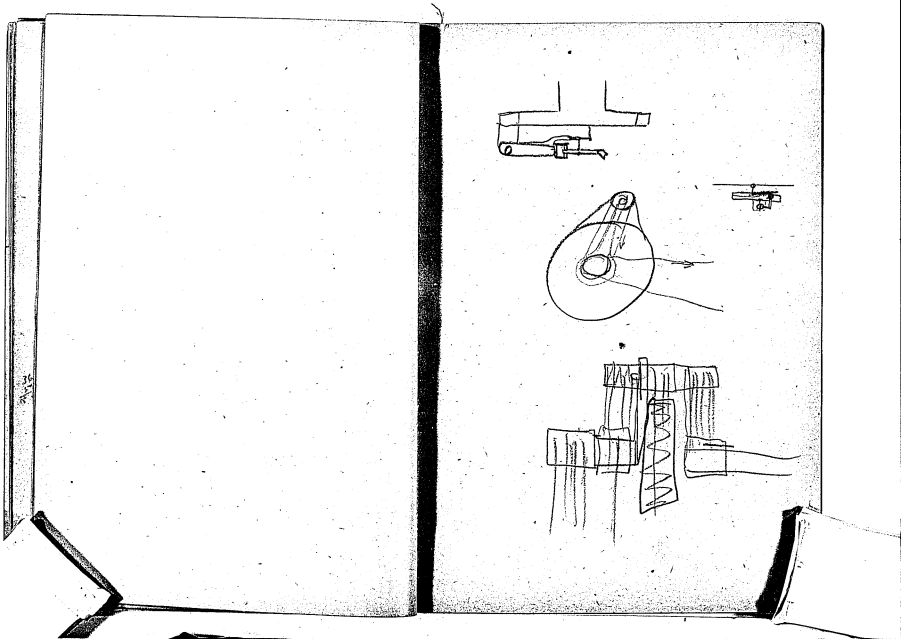
Kennelly=	1500
Bay—	350
Office Boy—	240
Ebdell.	500
2 watchmen S.I.	800
Freddy—	600
John Ell.	1500
Fred Ell	1200
Kayser	1200
Goward	1100
Wurth	1200
Thomas.	1200
Walker	1100
Engineer—	1200
Allwood	1500
3 workmen	3000
Chemist	450
Dixon	1500
Shirley Berger	1500
Aylsworth.	900
Lilborn.	450
	18600
	5000
	23600
	3100
Coal.	1500
Tax	1500
	3100
Gas	300
Telg.	1000
Office Exp.	
Laboratory	
Carpenter	39100

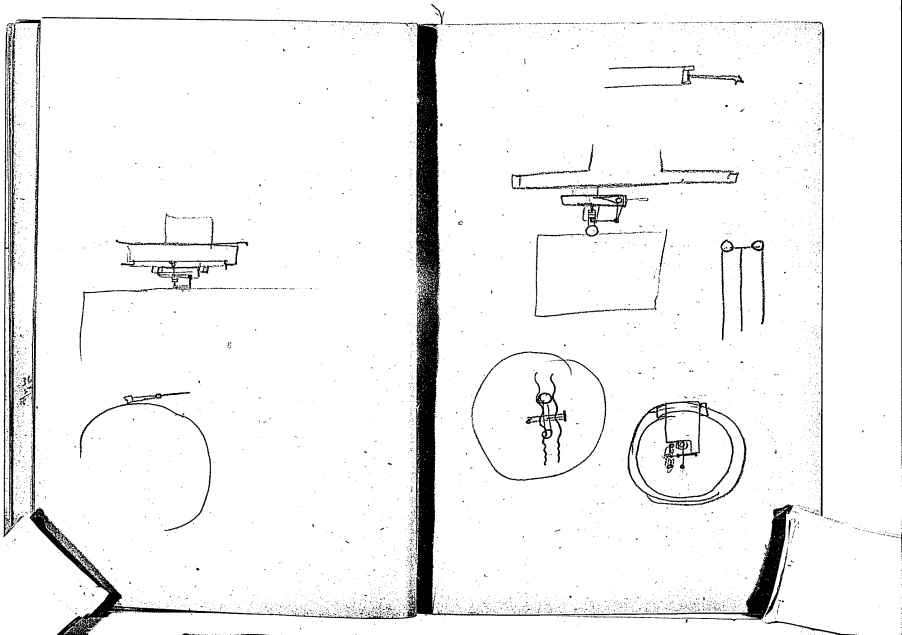


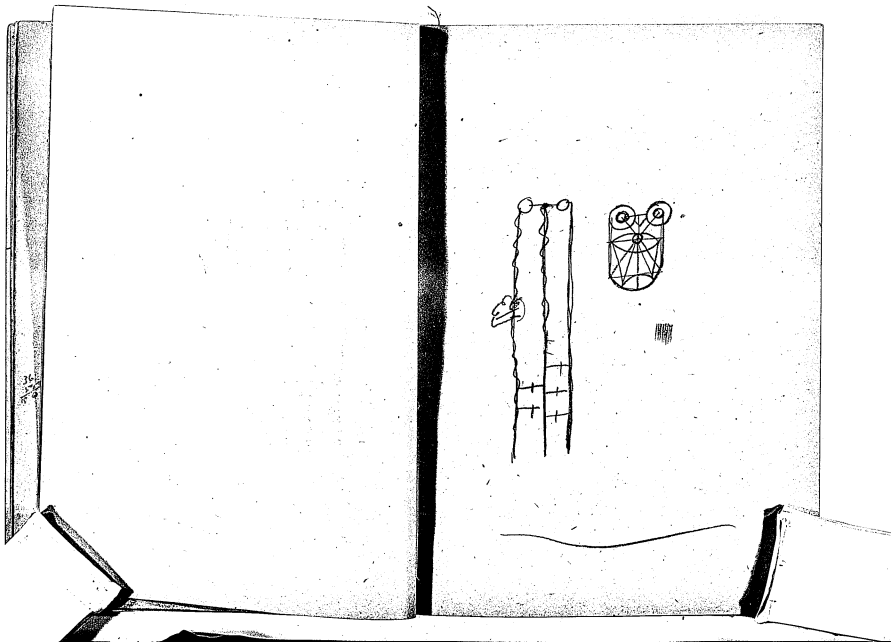


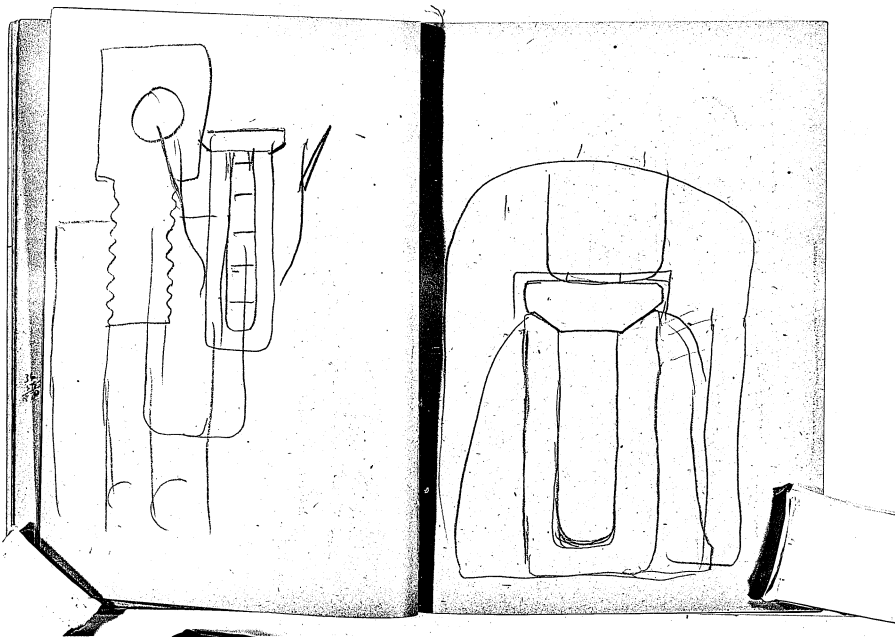












16
20
3.2 o

Construct Dynamos for Compelolus purposes at ½ the Cost of present Machine –

Increase the present Lamps from 240 C per horse power to 320 without any more Cost per Lamp + capable of used with the present ~~of~~ 240 Lamps 20 per cent less Copper per Lamp than at present

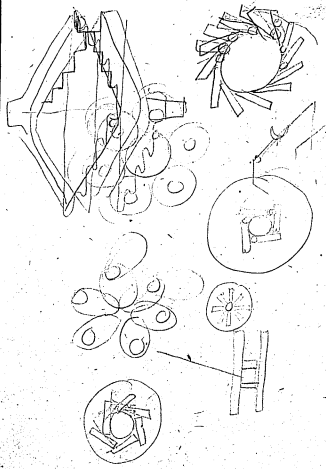
To Eradicate from the present Lamp without diminishing its life or economy the defect of gradual ~~drop~~ Loss of CP to an extent greater than any known Lamp

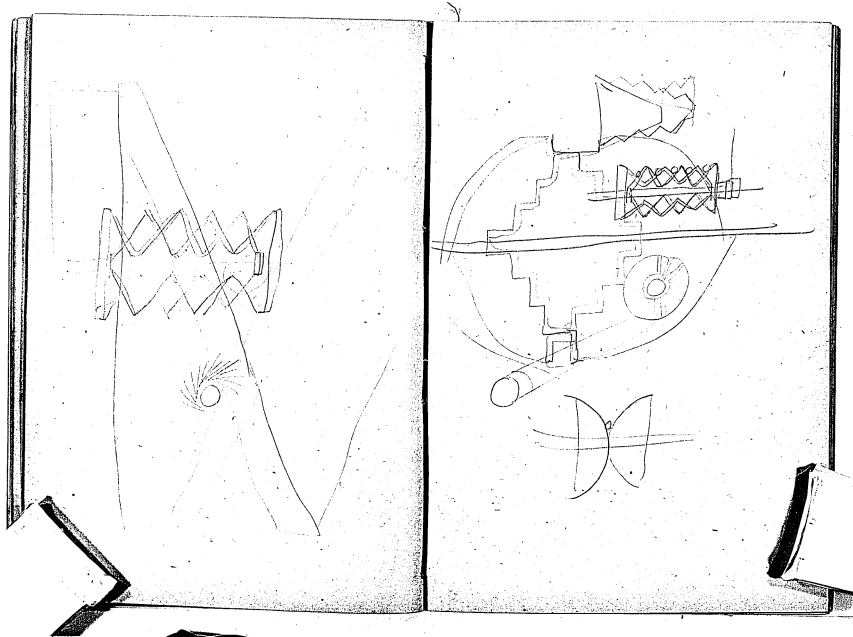
and in the Case of 20 per hp the average CP. for 1000 hours not to be exceeded by any Known Lamp - higher than ~~14~~ higher than 14 per hp –

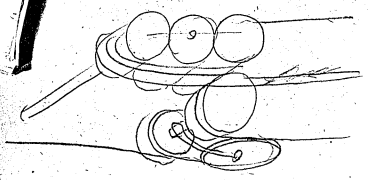
To diminish the Cost of present Lamp. to 16 Cents –

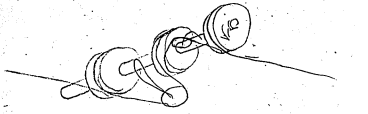
to Make a 200 Volt 20 Cp Lamps ~~Equal~~ Superior in respect to economy CP + Life to any 16 Cp Lamp known

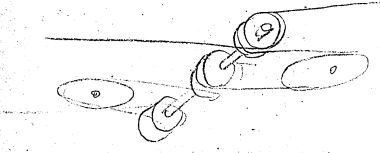
Tadeusz a compléter aujourd'hui
d'attaquer











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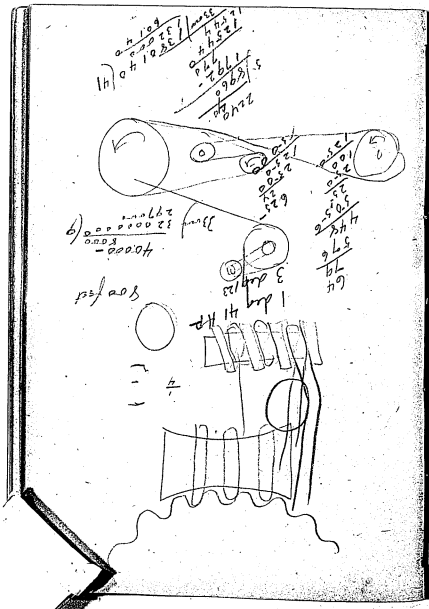

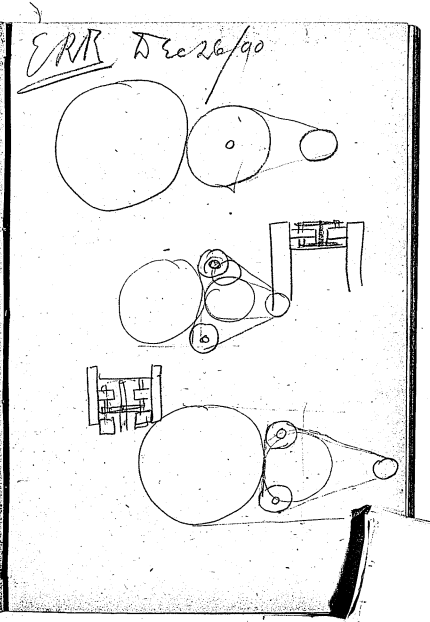
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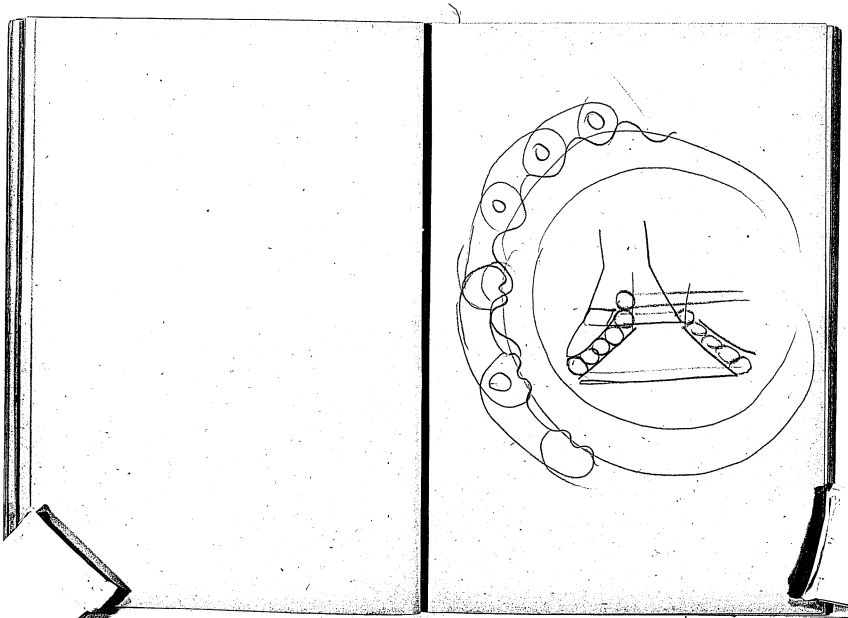

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4000

250 | 700 | 2.8.
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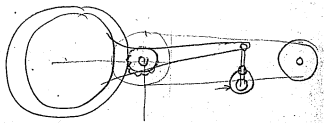
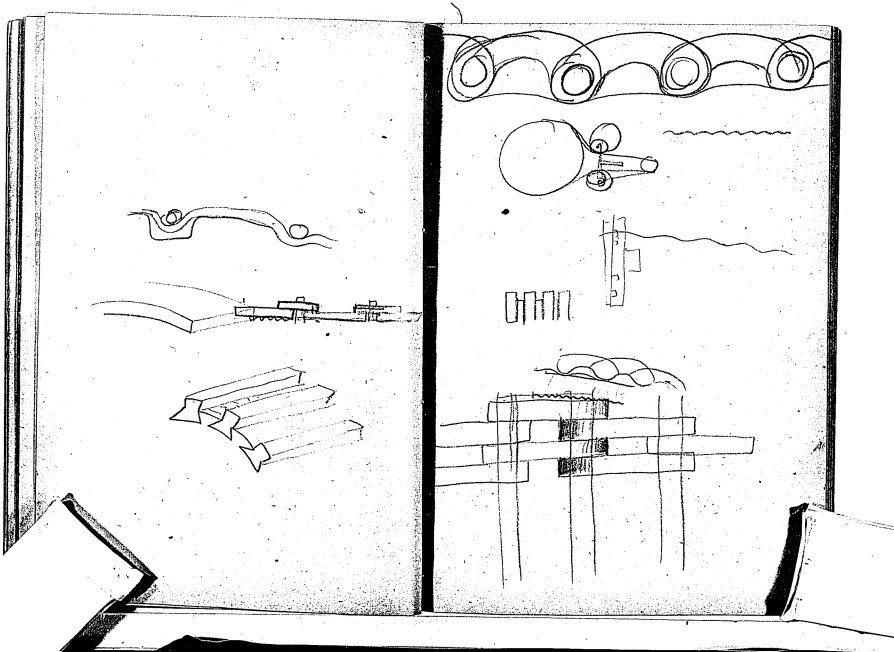
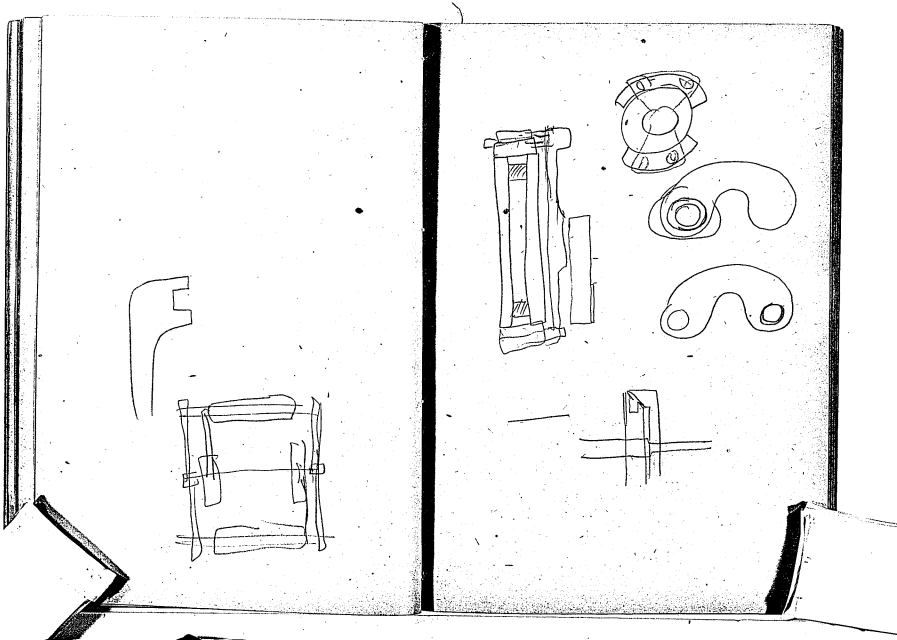
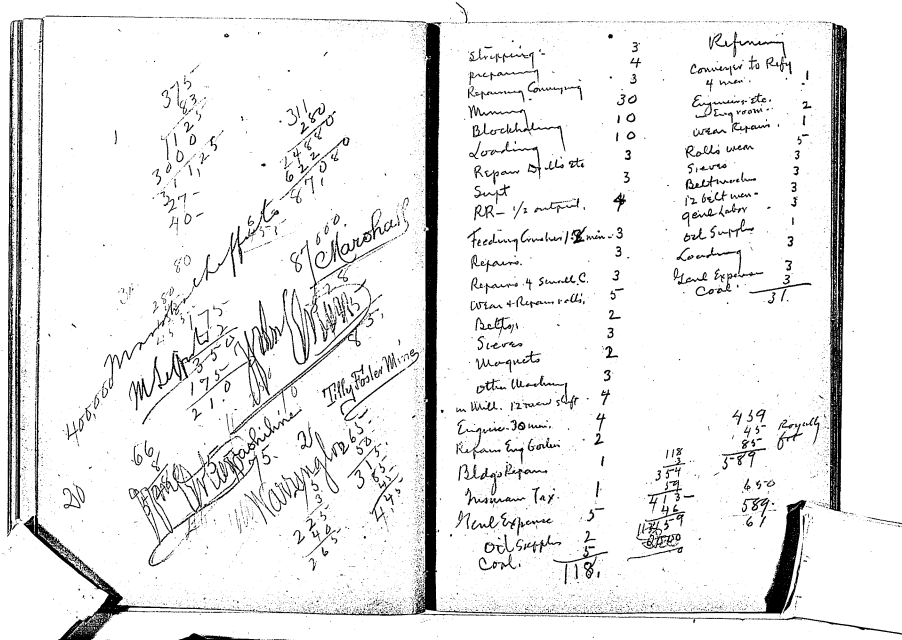


27. 15/7 = 22 - 150/7

36. 60 = 123 -






Stripping 3
preparing 4
Repairing Conveyors 3
Mining 30
Blocksetting 10
Loading 10
Repair Drills etc 3
Supt 3
RR - ½ outputd. 4
Feeding Crusher 1/2 min 3
Repairs 3
Repairs 4 Swell C. 3
Wear + Repair rolls 5
Belting 2
Sieves 3
Mosquito 2
Other Mendong 3
in Mill. 12 men Staff 4
Engine 30 min 4
Repairs Eng Garden 2
Bldgs Repairs 1
Fireman Tax 1
Mend Expense 5
Oil Supplies 2
Coal 5
118
Refining
Conveyor to Refy 1
4 men
Engineers etc. 2
Engroom
Wear Repairs 1
Rolls wear 5
Sieves 3
Belt men 3
12 belt men 3
general labor 3
Oil Supplies 1
Loading 3
Hand Expenses 3
Coal 3
31
439
45
484
589
Repairs
Coal
Hand Expenses
Oil Supplies
Loading
Belt men
Engineers etc.
Conveyor to Refy
4 men
Refining
Tilly Foster Mines
Marshall
Mc Kinney
Mc Nair
Mc Laughlin
Mc Donald
Mc Carthy
Mc Cormick
Mc Kenzie
Mc Kay
Mc Gregor
Mc Intyre
Mc Millan
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Mc Zeal
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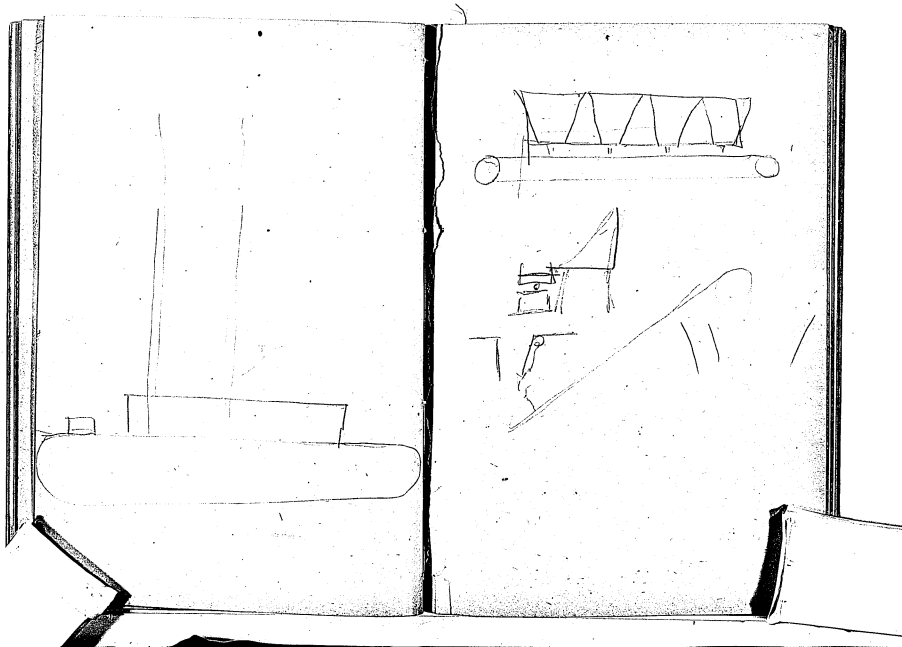

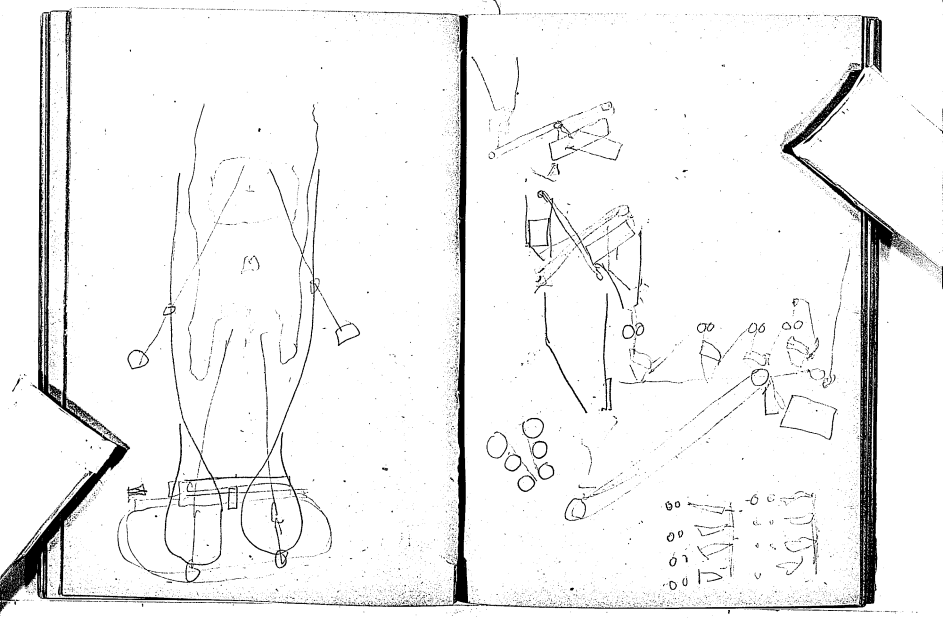

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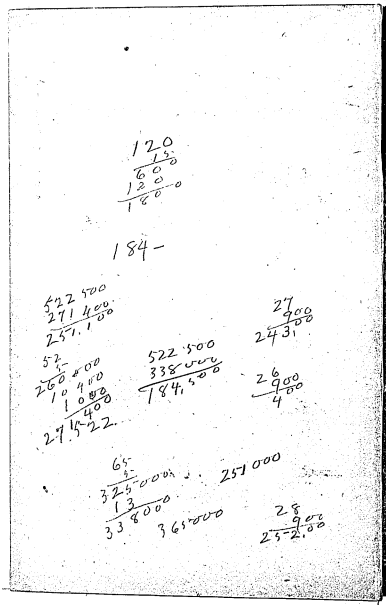

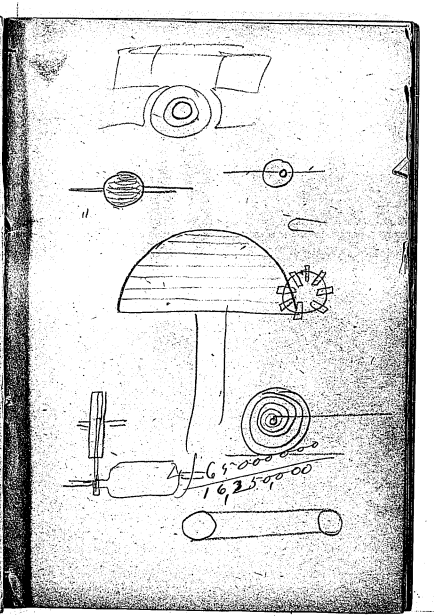

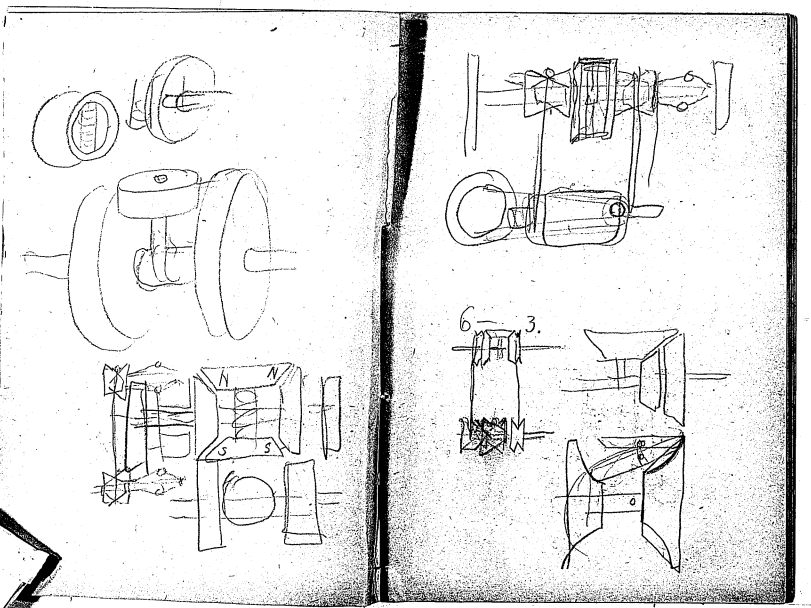
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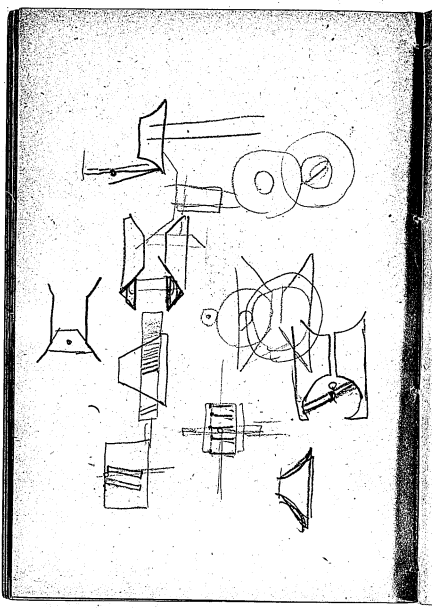
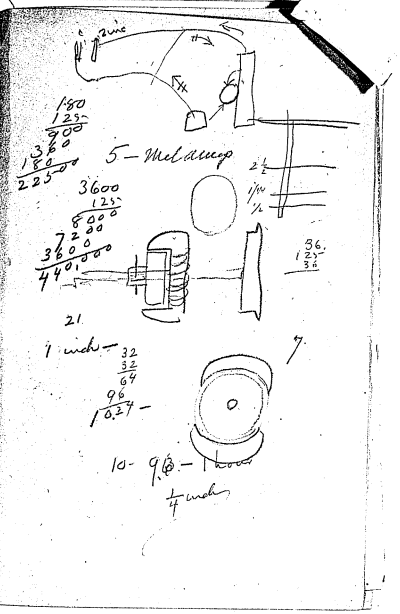
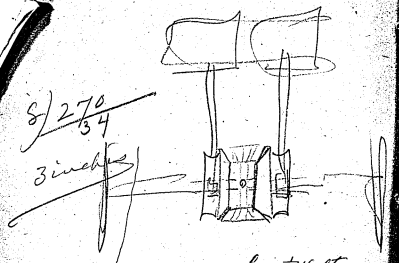
3.




2 inch
5 – Meter
180
125
900
1350
1800
2250
3600
125
8000
7200
36000
44000
21
1 inch –
32
32
64
96
1024 –
10 – 96 – 1 hour
4 inch

50



8/270/34

3 inches

1000 ohm ¼ Volt

83 Melyna .00025 amp

4/373

.932

8388

31
31
31
500/10000/10000

9 3/4
9.6

" 100 ohms 1/10

7	9
6	9 1/2
5	9 3/4
4	10
3	10 1/2
2	11
1	14
1/2	17
1/4	20
1/8	23
1/16	26
1/32	

5000

50 1/10

3 2500/15

20

2500 –

.00025 4/10000 amp

1000 – 1 Milliamp

373.

120
12
12
14
120
28
14
168
165 500.
365
100,000
730,000
312
624
34000
6500
365
64
4
260000
45 500
1600
6500
307
215
109
365
3400
5-22
307
215
522
315
184
307,
45500
65
35
365
200000
73,000,000
472500
307000
63000000
315000,000
364,000,000
472500
315000
150
157500
315000
472500

maximum load —
100 000 = lights averaging
3 hours each day —
300000 lamphours.
15 per hp basis
100.000 Light Station. Cooling
Day 1.200 000. —
100 000 lights actually burning
at one time in Dec at 530 pm —
average during year. 2 hours.
365 days 2 hours daily —
or 73,000 000 lamphours which
on gas basis is 365000 M³
sold at 150 per M the
average price gas - gross receipts
$432 500 — If we assume
that Operating Expenses are
65 pct then the same owned be
332 500 leaving 165 500 profit.
which is say 13½ pct 11½ on
[illegible]

20 per hp bases -

Coal etation. for machinery
1/3 less for building ~~ground~~ 1/4 less for installing
1/4 less Underground 1/3 less
or about 300 000 less
making investment $900,000.
The general Expenses will be
about the same. The actual
Expenses for coal oil water
~~insurance~~ wash will be 1/4 less
or say the operating Expenses will be
= 52 per cent of receipts,
as the receipts will be the
same as in the other Case
to wit $472,500 then deduct
271 ~~operating~~ Expenses 227,500 profit
about 25 ~~20~~ per cent dividends as against
15% ~~12%~~ with 15 per hp —

7500
15
37500
7500
112500

7300
11
36500
7300
80300
19

7000
105000

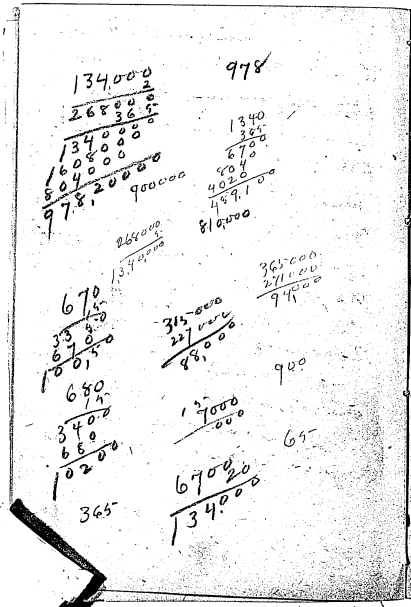
472500
245000
227500

5

25
9
225

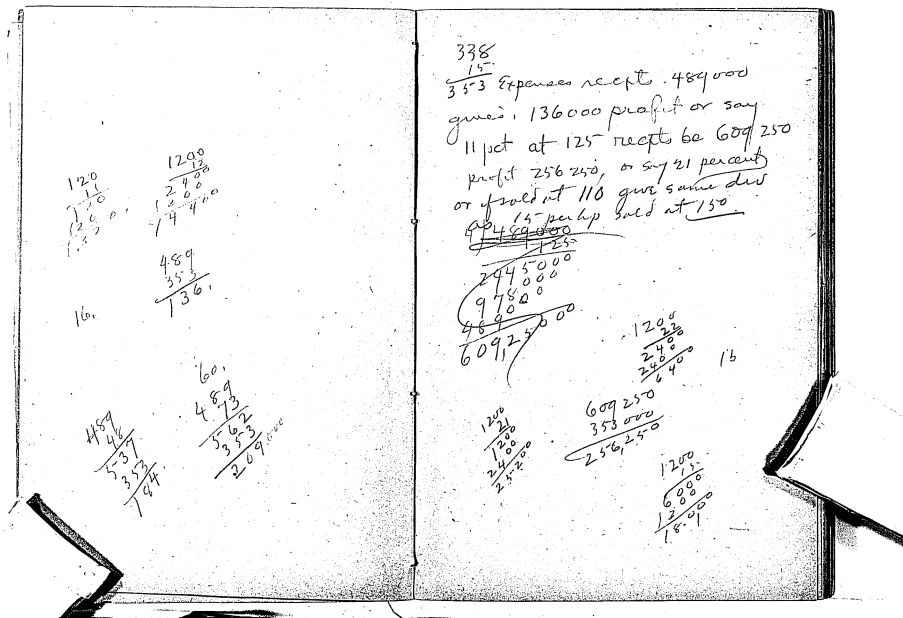
52
4
208
36
244

520
7
3640



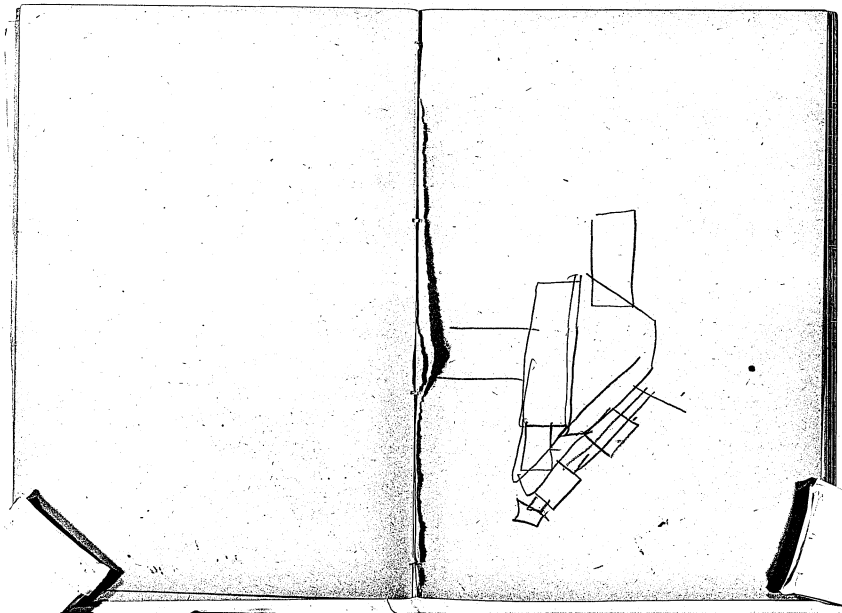
If we now reduce the price to 100. The receipts will be 365000 Expenses 271000. leaving 94000. or 10 1/3 pct d/v pct d/v

But if we have the Original investment of 1200,000 and assume that the reduction from 150 to 100 will increase the Consumption then the Lights will be 134000. giving gross annually on 2 hour basis an Equivalent of 489,100 cf gas at $1. gross receipts. 489,100 as the general Expense with Exception of pump to the with Exception of pump station, then for a 100000 light 15 pump station, then 538, with 12000 add for Lamps the Expenses will be 3000 for meters Total



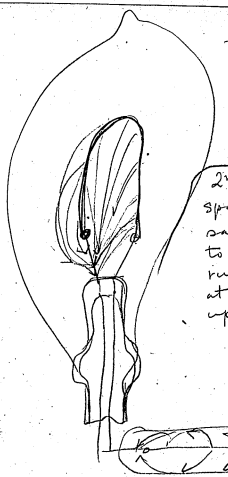
Co to pay for experiments in the regular method of charging at Laboratory, but the total yearly

~~3/4 of the total~~ [illegible] of the Thereafter of the Expenses of the Laboratory w.b. to be paid by the Co and 3/4 of all the work done at Laboratory shall be for the Co, and ~~[illegible]~~ The other 1/4 shall be split 1/4 Edison 1/4 [illegible] 1/4 mutual or unallocated as to [illegible] adopted by the Co. and made use of Edison shall get 1/5 of the benefits accruing to the Co - to be mutually agreed on or submitted to arbitration, and a new [illegible] of benefits may take place at End Eighteen or of either party's



Boil SO_4 in 10 bulbs. then wash in distilled -
pass current through fil in dilute SO_4 - with platinum weight on fil & Wilson clamp meter - do 4 in pump room of ok make 10 Lamps with highest amp move fil around while doing it -

Make Lamp on spoon glass Run up to get rid blue in globe & then to get the black spot near blue clamp & then notice its gradual spread over whole of Carbon



Try 5 Lamps spoon glass - heating bulbs before urking fil - heating one arm before [illegible]

2nd 5 Lamps spoon glass - get coated tube hung to visible red run 1/2 minutes at most. then work up quick -

Try Lamp that has run in a Curve but not blackened with Hcl & see if scale comes off

Try 5 Lamp Exhaust spoon
phos, then 6k Vac ~~heat~~
take lamp off + heat bulb
very hot just as if you were
to burn off scale of block
+ Re-Exhaust.

Have Dishler pick out
20 Lamps each having
same life - say 100 200
3 5 7 10 15 20
30 + 4000 hours not any
Selected -
Then I will study
Evolved for peculiarities

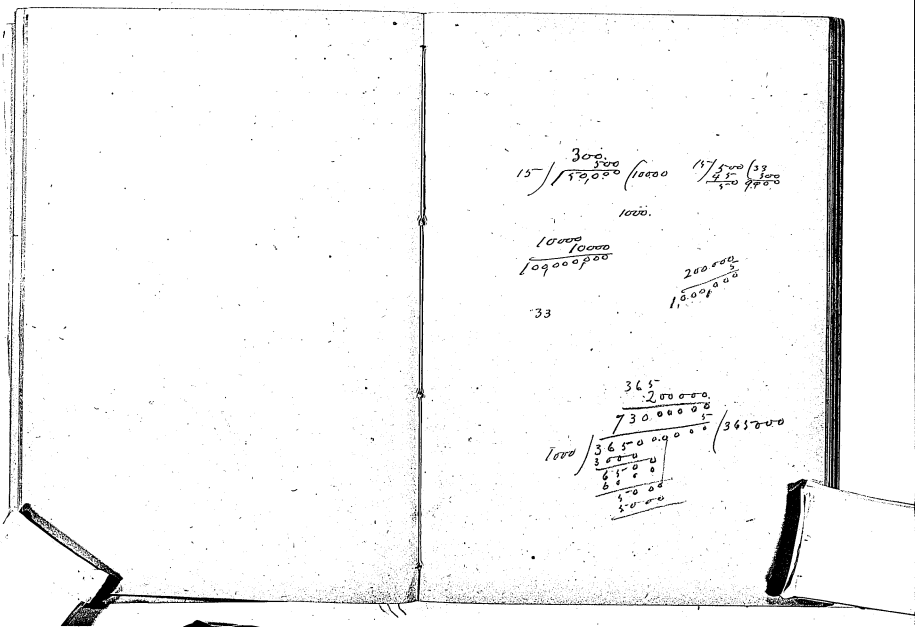
find drop of Cp on M3 -
Selected specials -
-

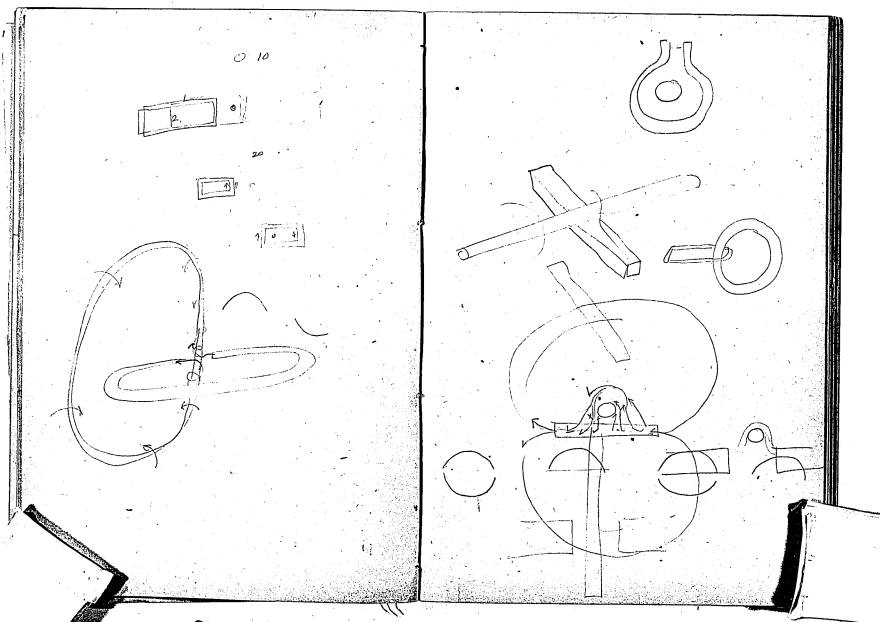
Try dip fil in ~~one~~ 17 then
bring up with 40 Lamp
bank - dotto dipped sugar
do Carbut in Chloroprid -

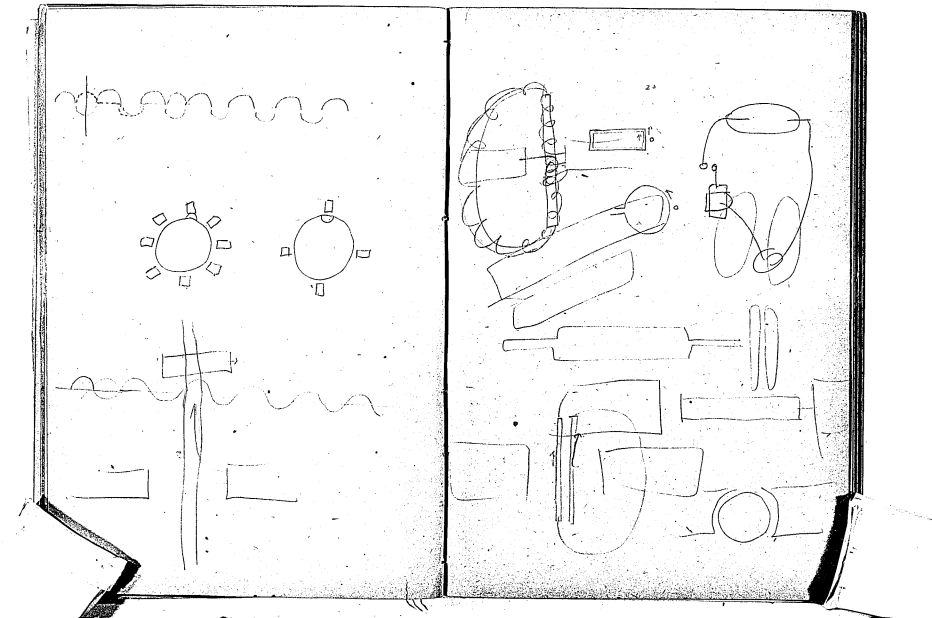
Have Freddy preliminary
50 fils up to 650 Fahr
in Charcoal + nitric 6 ox
8 hours - Take out
dip 17 at 100 - then
send to Mart - same
time Run the 64 pc we last
squirted through in Charcoal,
some original Charcoal take
out

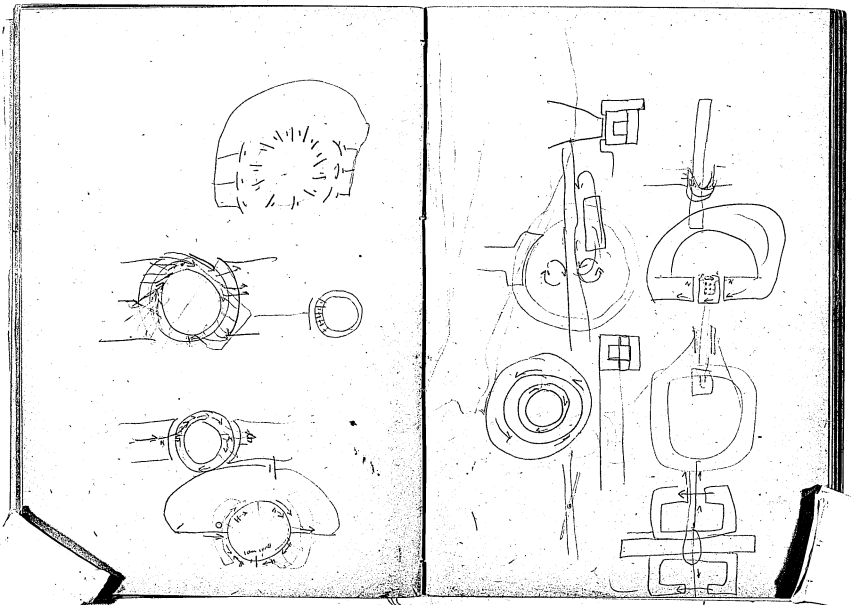
Load Nickel box up as
follows: box with 10 + 005-
last squirted fabric 1/2 of each
in charcoal 1/2 without,
also box with 50 fabrics Req.
bamboo another box or box
50 in charcoal - another
box 50 tied together,
Run to 650 in 8 hours
take out all ~~boxes~~ +
Examine if squirted ok put
back - ~~if~~ 10 of the 50 ok -
take ~~50~~ with charcoal
+ put them back -
Take 15 of the 50 without
charcoal dry in 17 at 100°
dry and put in charcoal.
Take the bunched ones
dip dry ~~and~~ send to Mart also the
~~with~~ 2 35 -

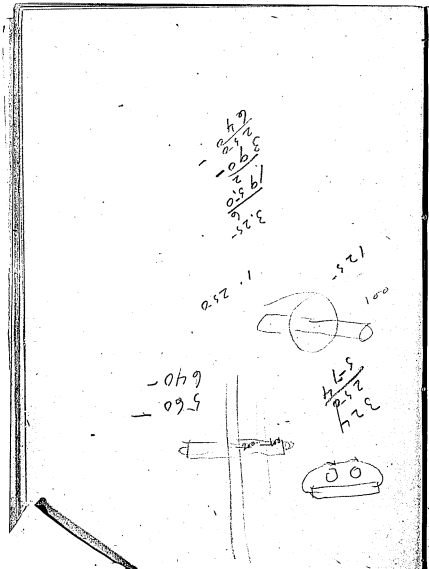
of Castor oil acts on phos
it work in the new spoon
device -











Doubling the number of lines of force cut by a wire whereby the amperes are doubled in a wire doubles the number of wheel lines ~~so cut to the same time~~ and ~~so the effect when cut~~ ~~so recorded~~ to weaken the lines without increasing their velocity or ~~your~~ standing Galileo it must double their amplitude ~~without~~ increasing their number in ~~200~~ ~~are probably~~ two lines but the waves double in amplitude

If one turn of wire encircles a bar of iron, there will pass into it & 62 condensed in certain number of wheel lines from the Copper ~~say~~ if two turns there will be twice the Condensation with any turn, the number of Condensed wheels will be in proportion to the iron enclosed by the wire — two ampere turns, double the Emf of the wheel lines 2 turns or a Dynamo, double the Volts

In an iron wire carrying a current a part of the whirl is contained in the wire itself and thus retard signals — this is not so with Copper —

In pure copper the molecules go with the whirl nearly - but not quite hence heat. If the orbital paths of the Copper molecules are disturbed by foreign molecules vibrating in different times Collisions occur & more heat is given out and there is a fall of pressure due to the work absorbed. If the Copper Molecule vibrated or moved with the Exact Velocity of a wave in the Ether there would be no collisions & no work no heat & hence no resistance —

Resistance of Electric Conduction more or less is a function of the orbital Velocities or vibrating periods or perhaps elasticity of the molecules of the aggregated molecules of the Conductor - The reason a metal appears to elasticity of the Ether the better it is

All Combustion between Molecules take place with the same velocity as light as a function of the speed of stresses through the Ether.

The battery when the Combustion gives 1 Volts. then when the Combustion gives 2 volts twice as many individual Molecular Combustions take place in the same time - or if this is not the Case the amplitudes of the which are doubled. owing to the double amount of Energy set free at Each given Molecular Combustion

as iron is a conductor like Copper but it Molecules ~~have~~ bonds being held together with an Elasticity less than the Ether + less than Copper the latter is the better Conductor. Therefore magnetic Condensations of the which of

Copper must be not as molecular ferrelism of the iron but a Crystallographic or other larger & more sluggish physical nature = which Magnetic lines may have the same velocity as light when propagated through the Ether. it is not so with iron

~~2nd Theory~~

~~All matter Conducts ether waves~~

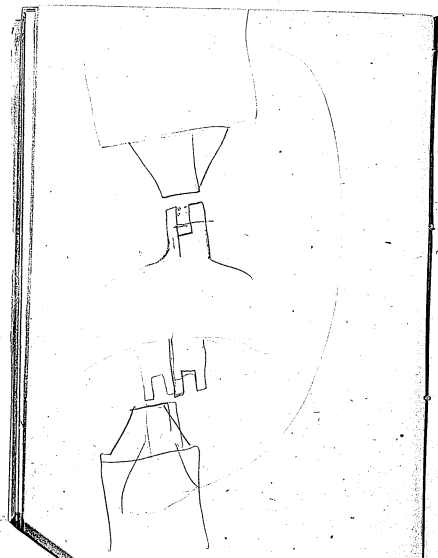
~~Crystallographic surfaces~~ —

The iron molecules are capable of motion in two directions on following the whirl when acting as a Conductor & are at right angles to this When the Whirl passes into iron

Reversal causes the Energy absorbed in standing the molecules to be given out as heat hence hysteresis heat

Saturation is produced when the speed of rotation equals the speed of the Ether waves no saturation is produced not up to speed or long —

permanent magnet is the molecule up to a given speed or amplitude + prevented from dieing to Zero by the intervention of matter which prevent the oxygen coming together in Cellular's Carbon for instance (10) Carbon Carbon, These lines of molecules once set vibrating make a closed circuit probably Williams + the more closed the Chain (10) the lower the resistance the

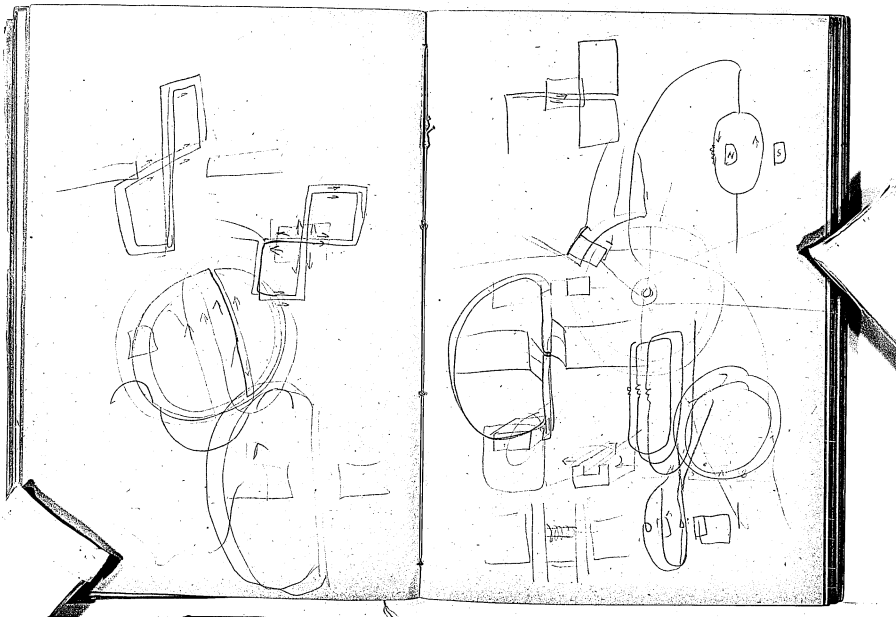


longer they will continue to rotate + mutually react on rotation ceases in steal the rigid system produced by Coulin Keep these ~~Molecules~~ lines of current separate hence they keep out without loss or diminution of amplitude of the wave about be closed -

It may be the reason that - permanent steel lines can be produced in wire as against Copper is that ~~Steel~~ Copper forms but one Chain ~~of~~ or molecular current whole wire has thousands + thousands of lines through the current in other words the magnetic metals have groupings in straight lines each molecular Connected with the other whole non magnetic substances have no such property perhaps the very opposite =

Some such action as this is implied by the lengthening of a magnet without alteration in its bulk - & that there is air space when magnetic is shewn by the sharp sound on breaking

Certain alloys of manganese & iron with 70% of iron are now magnetic hence they must prevent the formation of these molecular arrangements of Carthagen non particles & hence no threading - it also proves that individual iron molecules are not of themselves magnetic but the phenomenon is due to mutual action & that chains of molecules giving closed circuits can be had or otherwise surrounding them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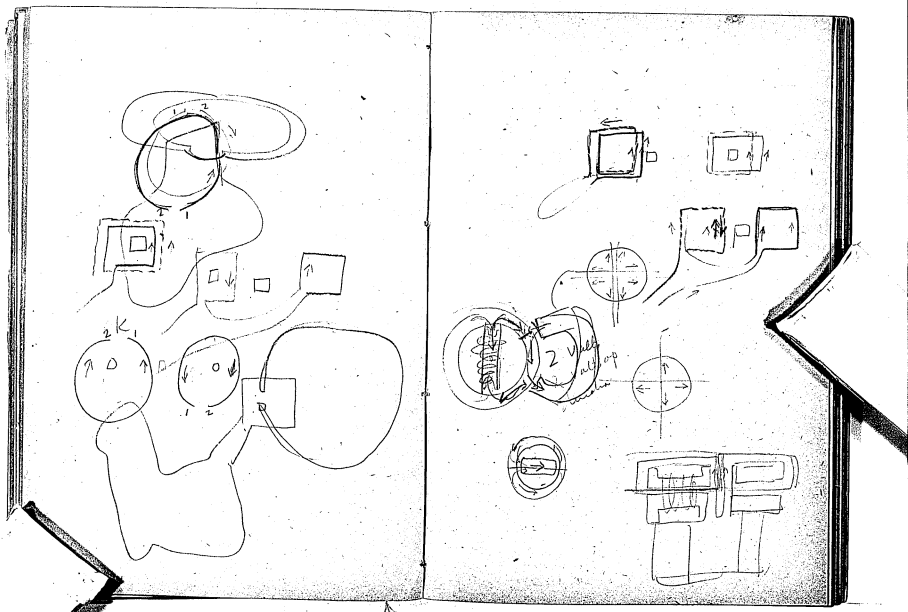

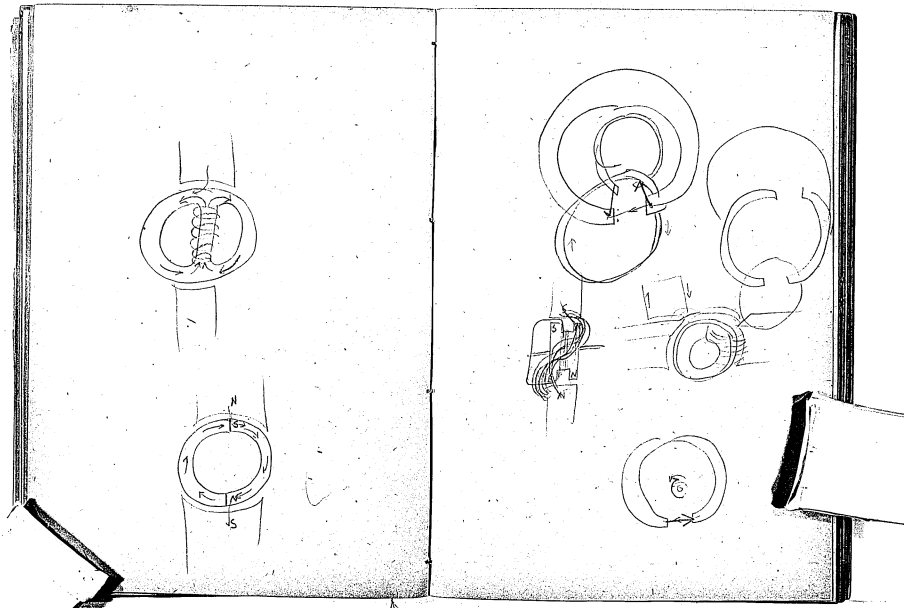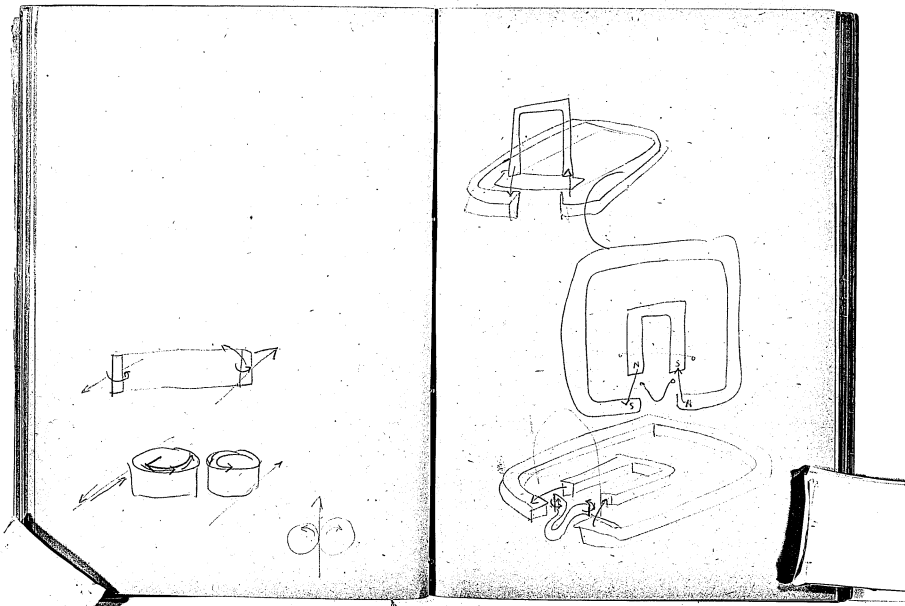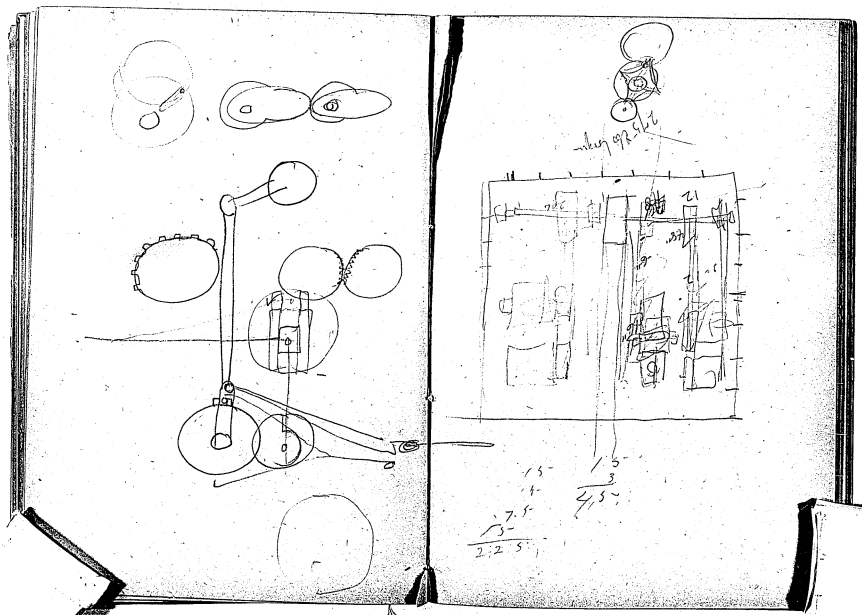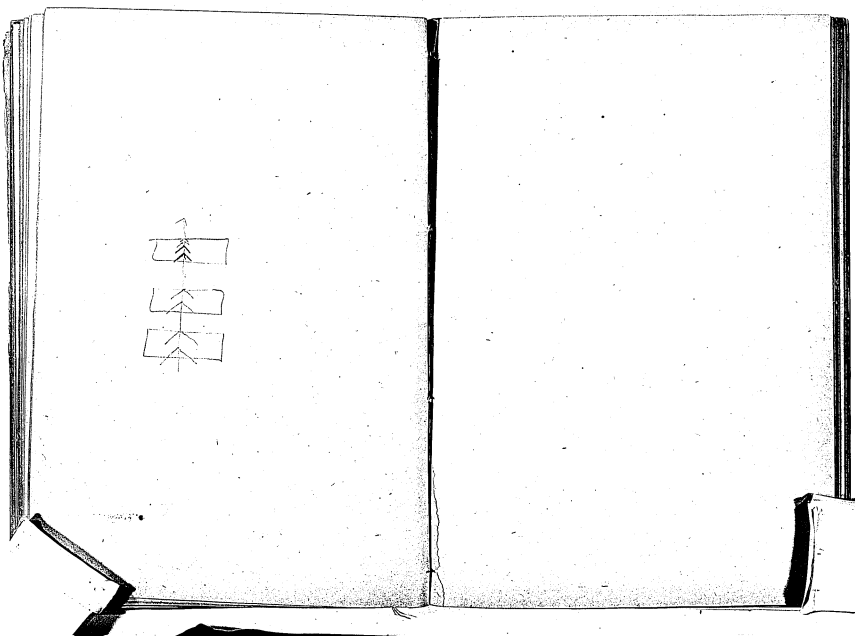
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